

### **ABSTRACT OF THE INVENTION**

A high capacity assay platform capable of binding target molecules includes a substrate and a polymer matrix attached to the substrate. The polymer matrix comprises a plurality of polymer molecules where at least some of the polymer molecules are covalently attached directly to the substrate and at least some of which molecules are crosslinked to other polymer molecules. Some of the polymer molecules have at least one binding ligand covalently attached thereto, and the density of the polymer matrix on the substrate is at least 2  $\mu\text{g}/\text{cm}^2$ .

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